

From decoration to industrial design: Gio Ponti and color in architectural innovation

¹Michela Rossi
michela.rossi@polimi.it
¹Giorgio Buratti
giorgio.buratti@polimi.it
[corresponding author]

¹Department of Design,
Politecnico di Milano

ABSTRACT

Gio Ponti (1891-1979) was one of the first Italian architects who actively dealt with industrial design, combining the classical tradition of craftsmanship with the request for modernity. Mainly known for his work as an architect, he was also a painter and decorator and he paid attention to colour throughout all his life, promoting its importance in all of the sectors of design through his educational journal activity.

This paper focuses on the role of colour in Ponti's work, "surveying" his complete collection (1941-47) Lo "Stile" nella Casa e nell'Arredamento, also known as "Stile", the magazine he created after his disagreement with the publisher of "Domus", a previous periodical he had directed since its foundation in 1928 and continued to direct after *Stile's* closure. The purpose is to verify the consistency between the role of colour in Ponti's design work and his writings. He began his professional activity decorating ceramics, where colour is substantial. Then he devoted his activity to furnishing accessories, domestic interior and building elements, in the significant years between World War II and the reconstruction period (1940-1959). His educational aim was to spread a new aesthetic concept. The magazine was addressed above all to ladies, to whom Ponti attributed a main role in characterizing the house, recognizing their attention to art and culture besides a spontaneous ability to create functional and elegant domestic environments where colour joins a note of cheerfulness. The objective were different from the other contemporary architecture periodicals and the magazine was new both in contents and graphics, where the communicative power of drawing was enhanced through a widespread use of colour.

KEYWORDS

Italian house, Interior design, Colour design, Colour and decoration, Ceramics and architecture.

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Michela Rossi is full professor in the faculty of the School of Design in Politecnico di Milano (Italy), where holds the Drawing Studio in the course of Interior Design since 2008. She graduated in Architecture (1985) at the University of Florence and gained her Ph.D. at the University of Palermo (1993) in Architectural Survey and Representation. In 1998 she becomes assistant professor in the faculty of Architecture of the University of Florence. In 2002 she is associate professor in the faculty of the School of Architecture of the University of Parma. She focused her research on shape grammar and typology in the various architecture scale: first the brickwork design in west tradition; later the landscape drawing in artificial environment; last but not least she applied to the relations between color and Architecture in design of formal structures.

Giorgio Buratti is Ph.D. in Design in the School of Design in Politecnico di Milano (Italy), where he graduated in 2000 with full marks. In the same year he obtained his master's degree in ergonomics and he is teacher assistant in several courses. From 2015 he is adjunct professor in Politecnico di Milano. He focused his research on the understanding of generative algorithms and parametric modelling system to generate articulated surfaces and high level complexity geometry. He is interested on relations between color and perception, in design development of biological patterns and formal structures and in digital fabrication technologies.

1. GIO PONTI AND COLOUR. WORKS AND WRITINGS

Gio Ponti was one of the most prominent personalities of Milanese architecture in the twentieth century. His interests ranged from architecture and building to interior design, encompassing also furniture and pottery design, as well as other industrial products, which made him an emblematic exponent of what would later become the Italian Design. He began his long professional life as a decorator and designer first, and then continued as an architect, intertwining ceramics due to his passion for colour.

As well documented by the first retrospective exhibitions held at the end of his life and short after his death, he initially expressed in ceramics the particular meaning that colour had in all of his works. [1] Indeed, about twenty years later, two recent exhibitions in Milan-Rome and in Turin confirmed the relationship with this art. [2] Alongside his successful design activity, he was involved in publishing and teaching, spreading a new concept of design, with the aim to renew the renovation of architecture and design.

Owing to a general recognition of his relevance in innovating Italian architecture and developing Italian Design, Ponti's entire work is known and well documented. It needs no further presentation. A wide literature covers different design topics starting from his debut in the 1920s as artistic director of Richard-Ginori up to his death in 1979, and his daughter's complete biography as well as the latest one (Rostagni 2016). Ponti's written heritage is well witnessed by his important editorial work that emerges in the two journals he founded and directed: "*Domus*", created in 1928 and still ongoing, (Miodini), and "*Lo "Stile" nella Casa e nell'Arredamento*", better known by the later title "*Stile*". Ponti edited the latter for a shorter period of time, from 1941 to 1947, during the war and the first reconstruction period, when he disagreed with the publisher of "*Domus*", the previous periodical he had directed since its foundation and continued to direct after Stile's closure. (Martignoni 2002).

This paper aims to broaden previous research (Rossi, Mele and Iarossi 2015; Rossi and Buratti, 2016 and 2017) on the role of colour in Ponti's professional activity by comparing his critical

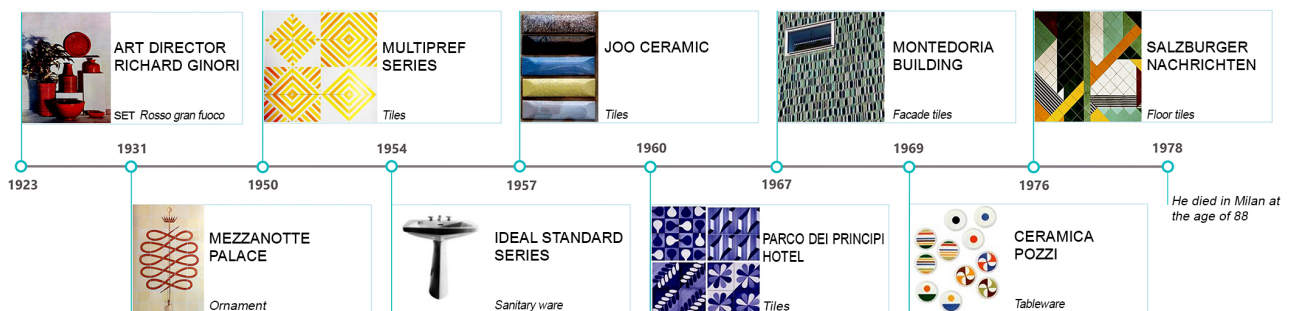
approach toward citizens' aesthetic education with his practical design work. To this aim, a "survey" was carried out on the complete collection [3] of the new magazine he created to enhance innovation in design. The purpose is to verify the consistency of Ponti's design work with his writings in the significant years between the war and the reconstruction period. Therefore, this paper focuses on Ponti's concept and on how colour interacts with design. Given his many works, the pictures refer only to those fundamental for this topics. Wider and copyrighted documentation is provided in the references or on line (www.gioponti.org).

2. FROM CERAMIC TO DESIGN

Ponti began his professional activity decorating ceramics, where colour is substantial. He then devoted his activity to furnishing accessories, domestic interior cladding and building elements. For over 50 years, Ponti designed all types of ceramic products for the house: furnishings, kitchenware, covering materials and sanitary fixtures, as evident from the chronology of his works (Figure 1). He always mediated his interest between the decorative value of the material and the design rationality of its industrial production. In fact, ceramics have an implicit reference to decoration, which in 1893 Alois Riegl defined as "*one of the most basic needs of man,*" even stronger than the need to protect one's body. The same decoration idea is evident in the design and colour that follow the surface plastic articulation of the objects without betraying the form. Therefore, Ponti chose these objects as a field of experimentation in the search for a balance between the values of tradition and the need to promote the renewal of society through taste, lifestyle and innovative production systems.

Despite his passion for this art - which already Camillo Boito indicated as a national excellence with prerogatives capable of enhancing traditional products - Ponti was never a ceramist in the true sense of the term. His work emphasizes the designer as a catalyst for innovating customs in the production system. In the first phases of the Italian design, he transformed the elements of decoration,

Figure 1 - **Chronology.** The chart shows how, during his career Gio Ponti, transformed ceramics from traditional to industrial products, merging the decorative value with the planning rationality



namely sign and colour, into two fundamental project parameters. Indeed, Ponti led this ancient and traditional art from craftsmanship to industry, inventing prefabricated architectural components and home pottery suitable for industrial production lines.

From this viewpoint, also the collaboration with Richard-Ginori is exemplary. From 1923 to 1930, Ponti was the art director of this age-old factory, still stuck in its eighteenth-century historical models as it was founded in 1737 in Doccia, near Florence. In 1922 Augusto Richard, who felt the need to renew the production system, called Ponti for an unofficial collaboration and asked him to re-launch the brand by modernizing the company's repertoire, taking care of luxury porcelain and majolica furnishings. Ponti designed a new series for the "Exposition Internationale des Arts Décoratifs et Industriels Modernes" (International Exhibition of Modern Decorative and Industrial Arts) in 1925 in Paris, developing the ornament and the colour programme for some sets of decorated objects with the aim to enhance the company's catalogue. The new products were designed with the purpose to be realizable on commission or in small series after the exhibitions, with the idea of developing an industrial production afterwards. Owing to the Expo, Ginori's new wares had an unexpected success with public and critics. In fact, the organizing committee's jury awarded the Grand Prix to the Italian firm, confirming Ponti as an innovator capable of changing craftsmen's old skills into modern industry, redeveloping tradition in Industrial Design.

According to Ponti, modernity had to do with

"quello che si fa oggi, con la tecnica di oggi, per l'uso di oggi... perché l'arte decorativa non è il disegno fatto su un piatto, ma la forma, la qualità, la destinazione stessa del piatto ed infine la sua presenza nelle nostre case".

["what you do today, with today's technique, for today's use ... because decorative art is not the drawing done on a plate, but the form, the quality, the destination of the dish itself and finally its presence in our homes".] (Ponti 1929)

Colour replaced decoration with new qualities as a result of the modern industrial processing. It became the variant that diversified the high-quality industrial product. The new productions were characterized by vivid blue, red, green and yellow backgrounds, on which decorative motifs stood out in a more neutral colour, according to an apparently random program that suggested the idea of a unique piece (Figure 2).

2.1 ARCHITECTURAL DESIGN

In 1931 the theme of ceramics intertwined with interior decoration on the walls of the canteen of Palazzo Mezzanotte in Milan, which hosts the stock exchange, and of the Tavern of the Monza circuit. (Miodini 2001). In fact, the two buildings are characterized by a rich ceramic decoration with figurative images. They are hand-painted in red, brown and gold on an ivory background, showing big pictures on 14x14 cm tiles (Rotti 2004). Colour is an original and exclusive feature of craft decoration, but Ponti's new use of a ceramic coating on the interior finishing of an elegant hall, such as marble and mosaics, opened the way to the widespread use of



Figure 2 - From crafts to design. Colour and shape become interchangeable parameters to optimize a newly conceived industrial production. Ponti chooses fifteen shades of color to obtain a notable product diversification, improving the commercial possibilities.

ceramics in architecture, at the time uncommon in the Italian tradition. (Portoghesi, Pansera 1982, Bojani 1987).

Between the 1950s and the 1960s Ponti also reinvented the coating of façades with ceramic tiles in a fruitful relationship with the industrialization of architecture, using smaller tiles with a smooth surface and angles reflecting the light in different ways. In fact, soft shades of green, blue, brown and pale grey interact playfully with the landscape depending on the weather, because of the natural colour of the sky. In 1956 he designed diamond tiles for Joo Ceramiche, creating a covering that changes colour when reflecting the light, and which he then applied on the façades of many buildings in Italy and abroad: Villa Diamantina in Caracas (which owes its name to the shape of the coating tiles), the San Carlo Hospital in Milan, the Cathedral of Taranto, and the Montedoria Building in Milan, which randomly alternates four types of emerald green tiles, obtaining a vibrating effect on the surface of the façades. In the same period, he designed an innovative set of sanitary ware for Ideal Standard, the main Italian producer, abandoning the classical previous shape for a new design, linked to functionality, which achieved an unprecedented commercial success. [4]

In the following years, he invented an external coating with enamelled pebbles reinterpreting the traditional Ligurian flooring. Presenting this new ceramic product in *"Domus"* No. 328, he explained that Architecture had simplified its surfaces, while covering them with incorruptible materials, because plasters age badly, especially in cities where the air is polluted. Therefore, they required glossy materials washable by rain. Moreover, he designed the surface of the tiles to acquire plastic values and to give lightness and grace to the huge volumes of modern buildings through the reflections of light and the sky (Ponti 1957).

For Ceramiche Sant'Agostino, Ponti renewed the catalogue with several geometric designs in three blue or green tones. In Hotel Parco dei Principi in Sorrento he paved more than one hundred rooms with different combinations and ever-different designs (Ponti 1964). A similar solution in green was used in the rooms of Parco dei Principi in Rome. The ceramic gives a luminous identity to the interiors, highlighting the choice of a single colour in several shades as an element capable of unifying spaces. About ten years later, the ceramic floors of Salzburger Nachrichten's offices were a hymn to colour, thanks to the abstract geometric composition that fit to the irregular shape of the rooms' floors, combining tiles with different colours and patterns.

2.2 DOMESTIC INTERIORS

In interiors, Ponti considered colour as a main feature of the house. However, colour is extraneous to the real substance of architecture, which is colourless as it is the art of composing volumes (Ponti 1957). This clarification, written in mature age, recalls Le Corbusier's statement and recognizes areas in which colour becomes important and must be used correctly. His notes on the use of colour are found in *"Amate l'Architettura,"* which may be considered as a cultural will confirming the ability to distinguish the peculiarities of the different scales which contributed, in a fifty-year-long activity, in defining the autonomy of Interior Design from Architecture. (Ponti 1957)

Ponti was a great populariser, one of the first to realize that education to style could be important in affirming an architecture capable of interpreting the needs of contemporary society. The article *"The colours in furniture,"* published in *Corriere della Sera* (Ponti 1933), well describes his idea of colour in domestic spaces. Some months after the presentation in *"Domus"*, he addressed the wider public of the main Italian newspaper with the same approach and similar indications, and with small differences in the choice of colour and combinations. (Rossi, Buratti 2016). The comparison with what stated later in the pages of *"Stile"* allows to verify his evolution over time. In fact, colour as a central issue is emphasized in the magazine founded by Ponti, which he directed (with the exception of the last year) and published from 1941 to 1947 in the years of the war, a period marked by a radical change in society, customs, and therefore interior design. The magazine slowly changes its approach toward design issues, first adapting to the war situation, then thinking about the following reconstruction period. Ponti reversed the narrowness of the moment, with an architecture that was forced to live on projects without construction in order to disseminate the modern taste. Moreover, he prepared the ground for his post-war affirmation (Martignoni 2002). With regard to colour, the architect stated that the choice of in house decor reflected people's temperament and autonomy or their dependence on prejudices and fashion. In fact, he suggested that the choice of interior decoration is very personal and enlivened by the presence of bright colours. Colours are a gift that put blood in circulation and a typical and revolutionary element of today's lifestyle of which Italians have never been afraid. He continued by providing several indications for an autonomous choice with a correct distribution, illustrating seven different possibilities of juxtaposition on the different elements of a room, as if they were musical chords. Ponti argued that the blank spaces of walls lend themselves to a

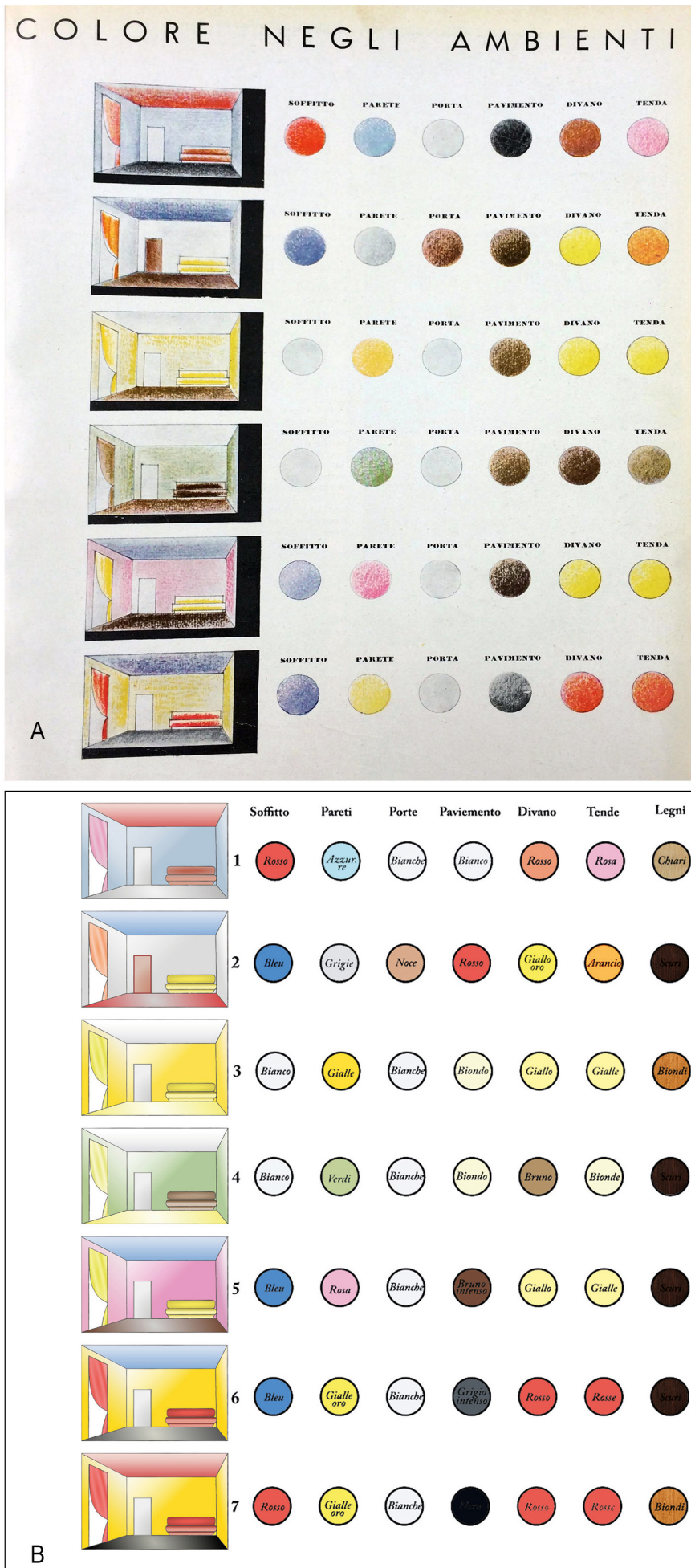


Figure 3 - **Colour in interior environments.** Ponti's proposal of chromatic harmonies between the different elements that define living spaces. The image A is from *Domus* 1933, n. 61, p. 23, while image B is the author's reworking based on an article published in the same year in *Corriere della Sera*.

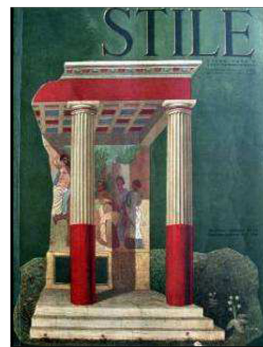
well-orchestrated play of colours, in which also the ceiling participates. Indeed, for the latter, he suggested striking colours, while proposing very light colours in the entrances and corridors and fresh and energetic colours in the rooms, inviting readers to dare bold combinations. For studios and small rooms, he recommended intense colours, while for the kitchens blue and yellow. The result is a different colour for each room, where the combinations between the different rooms offer a harmonious composition like the palette of a painting. A very similar scheme, with only six colours and six elements, had already appeared in *"Domus"* (Figure 4) (Ponti 1933). Years later he returned to the use of colour in interiors design in his considerations published in *"Amate l'architettura,"* claiming that a white ceiling is a void and needs to be closed by coloured walls, and accentuated by an intense coloured floor. The ceiling covers the room like a lid, it is its sky. Therefore, it can be dark, intense and ornate, because it becomes a page to read while fantasizing. The sky closes in, while fog or snow

widen distances and create discomfort, because the limits of the walls are imperceptible and one feels lost like on the pack. He also advised for the floor and the ceiling not to be both light or dark, suggesting *"a direction from light to dark"*: a black floor is a lake on which things float, while a light floor supports them; a coloured linoleum floor is like a lawn and requires a light ceiling. Architecture is achromatic, but its interior lives through colour. (Ponti 1957)

Between the two writings of 1933 and 1957, there is the happy parenthesis of *"Stile"*, characterized by an elegant graphic image, lightened by fresh drawings and with colour accompanying the illustrations (Figure 3). The magazine differs from its competitors for its cultural approach, open to costume and other arts: painting, sculpture, cinema, but also cooking, gardening, table equipment, literature and music. Moreover, and above all, it differs for the fact that it addressed ladies. Ponti recognized the latter's intellectual vivacity and cultural interest superior to that of their husbands, prompting them to take charge



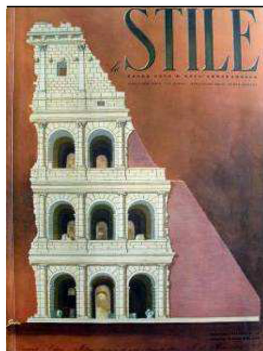
n. 26, February 1943



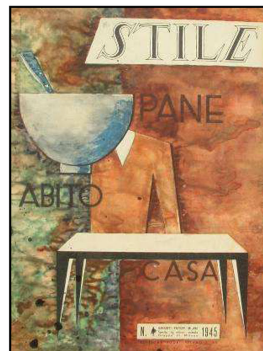
n. 16, April 1942



n. 23, November 1942



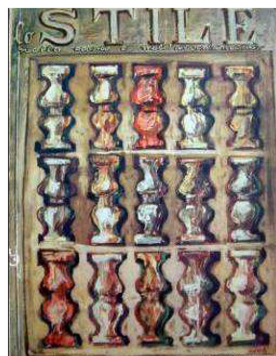
n. 15, March 1942



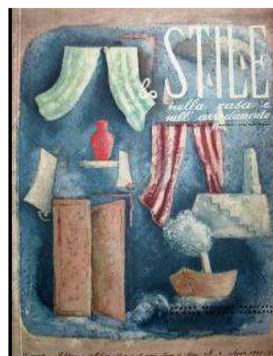
n. 4, May 1945



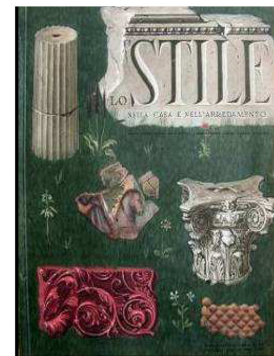
n. 1, January 1941



n. 2, February 1941



n. 8, August 1941



n. 10, October 1941

Figure 4 - **Magazine Stile.** Some of the 68 issues studied for this article. Gio Ponti directs the magazine from 1941 to 1947 (year of closure), practically taking care of everything: from page-setting, cover design, to columns, often signed with pseudonyms (photos by the author, Politecnico di Milano, Central Library).

of their education in art and of their taste for the formal concepts of modernity. (Ponti, 1957)

3. "STILE", COLOUR IN INNOVATING ITALIAN LIVING

Between the two writings of 1933 and 1957, there is the happy parenthesis of "Stile". The magazine was founded, directed and published by Ponti from 1941 to 1947, during the years that marked a radical change in society, customs, and therefore in interior design. It differed from its competitors for its cultural approach, which was open to costume and other arts: painting, sculpture, cinema, but also cooking, gardening, table equipment, literature and music. It was not addressed to the selected public of architects, but to who

"non separa arte e arti, per far cogliere le parentele fra le moltissime cose che sono espressione, ornamento o strumento della nostra vita e della nostra incantevole casa".
 ["does not separate art and the arts, to understand the relationships among the many things that are expression, ornament

or instrument of our life and of our charming house."]

The pages offer many references to colour, which was covered in depth throughout the entire period of the publication.

In the article "La casa colorata da nuovi tessuti" (The house coloured by new textiles) (Ponti 1941), the author invites readers to free themselves from any prejudices and suggestions of "cerebrals origin," which lead to use pearl-grey shades, pale greens, hazel brown and violet. He also refuses the "millinery" suggestions deriving from the combinations of cubist paintings that used "stronger" colours, such as brown (rather tête-de-nègre) with white and blue (Picasso) and Barolo red (Ponti 1941).

Ponti developed a chromatic code that re-proposed a notion of clarity and simplicity. It was consistent with the contemporary technologies, but it also symbolized the change in progress:

"Se noi siamo sempre dichiaratamente per la casa colorata, anzi vivamente colorata, noi lo siamo ora per un'altra ragione e per altri colori. Siamo per la casa colorata perché



Figure 5 - Color and patterns. Study of the relationship between the walls and the furnishing elements (from "The house coloured by new textiles", Stile, 1941, n. 11).

amiamo la luce, perché abbiamo schietto gusto per le cose squillanti e forti, e perché amiamo non più un colore, ma i colori [...] il mondo va verso il colore".

[If we are always explicitly for the coloured house, indeed intensely coloured, now we are for another reason and for other colours. We are for the coloured house because we love light, because we have straightforward taste for the bright and strong things, and because we love no longer a colour, but colours [...] the world goes towards colour] (Ponti, Corriere della Sera, December 31th, 1933).

His palette contained different kinds of colours and his writings suggested how to choose, apply and combine hues rather than stating which colours are better depending on circumstances. The same paper highlights how bicycles, typewriters, cars and the entire developing world of industrial products are forsaking achromatic colours for an increasing number of different nuances. The possibility of a serial production with new industrial materials, in particular textiles that "create colour and matter together," appears in the house's colour palette through contrasts and intonations of elements in the different rooms.

Ponti deepened the relationship between the architectural shell and the furnishing elements. Fabrics are to be harmonized with the ceiling, playing with colour. When spaces are bounded

by dark and solid-coloured walls, the furniture should be of a light colour and covered with bright fabric, or of a dark colour if the walls are light solid-coloured (Figure 5). The relationship between colour patterns and materials is also fundamental: if the furniture has a solid colour, the walls are to have a predominant articulated colour pattern allowing the environment to be recognized. The use of the same colour palette with different relationships depending on the environment has a special meaning. Materials and textiles with bright printed patterns and light and strong colours such as

"verde smeraldo, rosso barolo, blu carta da zucchero, giallo oro, bruno chiaro e scuro, cobalto siano i protagonisti di queste composizioni e concorrono tutte a creare nella casa un ambiente felice"

["emerald green, Barolo red, robin's-egg blue, golden yellow, light and dark brown, cobalt blue are the protagonists of these compositions and they all contribute to a happy home"]. Ponti, G. (1941)

Ponti integrated the technological evolution in the design process. Flipping through the pages of "Stile", the attention to colour as an economic aesthetic device is evident even in the advertisements, which promoted new products highlighting the interest of architecture in innovative plasters and wall paintings. During

Figure 6 - **Ducotone**. Advertising material of Ducotone varnishes: starting from the new colours that technological innovation offers, Ponti studies new possible harmonies for the modern home. (photo by author, Politecnico di Milano, Central Library)..

DUCCO MONTECATINI

Ducotone

suggerisce nuove idee per la casa

BIANCO SABBIA 143	per pareti e soffitti	265
GIALLO LUCE 179	per pareti e soffitti	179 247 1692 1001 1639 1430
GIALLO SOLE 247	per pareti e soffitti	
GIALLO ORO 265	solo per soffitti	
GIALLO TERRA 456	solo per soffitti	
ROSSO AUTUNNO 944	solo per soffitti	1639
ROSSO FIAMMA 871	solo per soffitti	143 179 247 1692
GRIGIO LAVA 781	solo per soffitti	781
ROSA AURORA 805	per pareti e soffitti	805 1639 1029 143 179 1347
GRIGIO CENERE 1029	per pareti e soffitti	
GRIGIO NEBbia 1061	per pareti e soffitti	
GRIGIO FUMO 1235	solo per soffitti	
VERDE ACQUA 1939	per pareti e soffitti	
VERDE PRIMAVERA 1992	per pareti e soffitti	
VERDE BOSCO 1945	solo per soffitti	
AZZURRO SORGENTE 1347	per pareti e soffitti	247
AZZURRO CIELO 1400	per pareti e soffitti	
BLEU MARE 1437	solo per soffitti	143 179 1692 1001 1639 1430

In questa pagina ripercorriamo, e abbiamo, il campionario delle tinte Ducotone, antichissime, moderne, il bianco nero e il loro mezzo. A destra, e nelle pagine seguenti di esperienza pratica al servizio dell'operatore, presentiamo le tinte degli accordi di colore che possono di volta in volta gli armonizzare possibili nel campo di lavoro. Questo, trovato di base la formula del soffitto (campionario) e con un solo di ogni combinazione, gli accordi indicati in lista dei migliori (solo per pareti) e per alcuni (soffitti, pareti, soffitti) e armonizzati in generale. Non è stato fatto il caso del soffitto bianco in queste pagine (solo il servizio con tutte le altre. Le tinte della tabella sono indicate: il pittore scelto si può ritrovare solo dal campionario.

World War II, the finishing of interior surfaces changed: cement plaster progressively replaced lime plaster and new materials with different optical and chemical characteristics blended in with mineral pigments and traditional binders. Also the type of light and interior luminaires changed (Jean 2013).

After the war, reconstruction pressed and the industry answered with innovation. The last years of *"Stile"* coincided with the introduction of new technologies in the construction sector by international chemical companies such as Keim or Du Pont. [5] They opened branches and laboratories in different countries, distributing their products on a huge scale. Following Ponti's innovation task, Architecture experimented new materials with different applications, while advertisement acted as a technical updating. Paints developed for the automotive gained the building industry as they were easy to use, quick in drying and not necessarily requiring technical experience.

Around the end of the war, Duco's nitrocellulose paint produced by Du Pont was advertised in *"Stile"* with different slogans, recalling the war and reconstruction background (Rossi Buratti 2016). The stable presence of Duco paints highlights an innovative value in providing information to readers. In fact, advertisements not only celebrated the product's qualities, but they also provided information on the product, illustrating the colour of the new paints and their proper use according to surface materials, finishing textures and exposure conditions (Figure 6). Hence, they rather celebrated the role of design in the power of industry.

4. CONCLUSION. COLOUR AND DESIGN

Gio Ponti's writing activity and his long professional work as a designer document a constant attention to colour, conceived as an intrinsic element of design (Ponti 1990) and industrial product. With *"Stile"*, he focused on women's attention to the importance of colour in home interior, conceiving home decoration as a lady's personal expression, as dresses are in fashion. On the other hand, his work with ceramic art - joining shape, design and colour - stresses the importance he assigned to colour in developing industrial design with new products for architecture and interior.

Ponti got rid of the *"fake old"* and the *"ugly modern"* balancing traditional techniques and new products, with the aim to speed up the dissemination of a new concept of colour in design, which was able to overcome craftsmen's hostility. The magazine *"Stile"* provided a significant example of a *"wide-ranging"* use of colour as an integration of a domestic daily life

capable of changing the image of houses in an immediate, cheap and therefore effective way.

The magazine's graphic layout also stresses his personal search for colour. The journal seeks the reader's interest through drawings and vivid colours, which were instrumental for focusing the readers' attention on the content of a page. Pure primary colours characterize the background of technical drawings, otherwise too much addressed to a specialist audience, while pastel shades complete the lively illustrative drawings of the columns, such as the one edited by Lina Bo Bardi and Giuseppe Pagano.

Ponti was not a ceramist. He approached ceramics as a designer, developing decoration and shape by designing industrial products with innovative features fitting the needs of the modern living. He stated that his works were *"not works as a ceramist, but design for ceramics."* The early experience in ceramic design permeated his entire work, influencing his global approach to colour, industry and architectural innovation. Therefore, on the one hand, the designer applied colour to industrial products as a means for variation; on the other hand, the architect applied colour to his interior projects and façade cladding, promoting the dissemination of new products and materials. Indeed, design, industry and colour enter into construction sites with reinvented products to meet contemporary needs. Ceramics are freed from the handmade and decorative component of the single piece and the unique design highlighting how industrial standardization allows designers to be free to combine design and colour. *"Stile"* witnesses how colour is the fil rouge of Ponti's design work.

In this paper Michela Rossi handled Gio Ponti chromatic production in ceramics, Giorgio Buratti has deepened the use of colour in industrial production and interior design. Both authors studied the writings and color relationship of *Domus* and *Stile* magazines from 1933 to 1943.

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CONFLICT OF INTEREST

The author declares that nothing has affected his objectivity or independence in the production of this work. Neither the author nor his immediate family member have any financial interest in the people, topics or companies involved by this article. Neither the author nor his immediate family member had a professional relationship with the people and companies cited in this

article. Neither the author nor his immediate family member are involved in a legal dispute with the people and the companies cited in this article. No conflict of interest including financial, personal or other relationship with other people and organization within three years of beginning the submitted work that could inappropriately influence, or be perceived to influence, this work.

NOTES

[1] L'opera di Gio Ponti alla manifattura di Doccia' in Faenza (1977); "Gio Ponti alla manifattura di Doccia" in Florence (1982); "Gio Ponti Ceramica e architettura" (1987) in Faenza and "Gio Ponti alla Cooperativa di Imola" (1993) in Imola.

[2] "Gio Ponti. Il fascino della ceramica [Fascination for Ceramics]", in Milan and in Rome (2011) and "Gio Ponti e la Richard Ginori. L'eleganza della modernità" in Turin (2016).

[3] Politecnico di Milano, Central Library

[4] Ponvas, Ponlav, Ponbid, 1954. The series of three bath accessories sold 400,000 pieces per year.

[5] Keimfarben GmbH was the inventor in 1872 of silicate technology and it is still one of the main paint producer; the chemical industry Du Pont Inc., founded in 1802 as explosives and gun power factory, in first XX century specialized in polymers with several important new materials (neoprene, nylon, Teflon and later Lycra, Corian and many others).

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